Instructor and contact information:
R. R. Brooks
313-C Riggs Hall
Tel: (864) 656-0920
Fax: (864) 656-1347
email: rrb@acm.org
PGP: 48EC1E30

Grader/Lab administrator:
You will receive their contact information once they are officially assigned.

Office hours:
Tuesday 4:00 PM – 5:00 PM, (16:00 to 16:50)
Or by appointment

Class meeting times and location:
Tues. 5:00PM – 5:50PM Watt Center 310
Charleston Zucker
Exam 7:00PM – 9:30PM Dec. 13 Watt Center 310
Charleston Zucker
Laboratory (Riggs 22-A, Charleston Zucker) access outside of class time. Laboratory access code given first day of class

Attendance policy: Course meetings mainly follow a seminar, rather than lecture, format. Attendance at course meetings is mandatory, since the seminar format includes in-class discussion. For the discussion, students are expected to have completed the reading assignments in advance. On days when presentations or demonstrations are due, students must be present and properly prepared. Students are expected to wait for 10 minutes, should the professor be late. Should students stop attending class, it is their responsibility to provide proof of the last day of attendance of class to the instructor.

Disability access policy: “It is University policy to provide, on a flexible and individualized basis, reasonable accommodations to students who have disabilities. Students are encouraged to contact Student Disability Services to discuss their individual needs for accommodation.”

Academic integrity: This course follows Clemson University procedures. Students suspected of violating academic integrity will be reported. In particular, any form of plagiarism will result in no credit for the assignment and being reported for further disciplinary action.

As members of the Clemson University community, we have inherited Thomas Green Clemson’s “As members of the Clemson University community, we have inherited Thomas Green Clemson’s vision of this institution as a high seminary of learning.” Fundamental to this vision is a mutual commitment to truthfulness, honor, and responsibility, without which we cannot earn the trust and respect of others. Furthermore, we recognize that academic dishonesty detracts from the value of a Clemson degree. Therefore, we shall not tolerate lying, cheating, or stealing in any form. In instances where academic standards may have been compromised, Clemson University has a responsibility to respond appropriately and expeditiously to charges of violations of academic integrity.”

“When, in the opinion of a faculty member, there is evidence that a student has committed an act of academic dishonesty, the faculty member shall make a formal written charge of academic dishonesty, including a description of the misconduct, to the Associate Dean for Curriculum in the Office of Undergraduate Studies. At the same time, the faculty member may, but is not required to, inform each involved student privately of the nature of the alleged charge.”

Please refer to the graduate academic integrity policy, approved March 26, 2007 by the Provost’s Advisory Council, at
http://gradspace.editme.com/AcademicGrievancePolicyandProcedures#integritypolicy

Each graduate student should read this policy annually to be apprised of this critical information.

Sexual harassment: Clemson University is committed to a policy of equal opportunity for all persons and does not discriminate on the basis of race, color, religion, sex, sexual orientation, gender, pregnancy, national origin, age, disability, veteran’s status, genetic information or protected activity (e.g., opposition to prohibited discrimination or participation in any complaint process, etc.) in employment, educational programs and activities, admissions and financial aid. This includes a prohibition against sexual harassment and sexual violence as mandated by Title IX of the Education Amendments of 1972. This policy is located at:
http://www.clemson.edu/campus-life/campus-services/access/title-ix/

Mr. Jerry Knighton is the Clemson University Title IX Coordinator. He also is the Director of Access and Equity. (for undergraduates) His office is located at 111 Holtzendorff Hall, 864.656.3181 (voice) or 864.565.0899 (TDD). (for graduate students) knightl@clemson.edu or 656-3181

Objectives and outcomes: This course is a project-oriented introduction to computer and network security. Security is a process that maintains well-defined system properties. Students will need to understand security threats and existing security countermeasures. Discussions will identify security
holes in current network implementations. A set of
class discussions will help students prepare their assignments. Ethical and
legal aspects of computer security issues are introduced and discussed as a part of the course. The
final includes essay questions on these topics. Assignments will include:
- Technical deliverables (system installation, implementation, test, and maintenance).
- Technical reports and design documents.
- Technical presentations.
Students are expected to create and deliver professional quality materials. Graduate students
need to implement a security research project and present their results to the class. The security project
should be at a level suitable for submission to a professional conference.
A note on ethics, legal issues and etiquette: In order to develop and maintain secure systems, it is
necessary to fully understand system vulnerabilities. This understanding is best attained by mimicking
the mindset of potential attackers. This course provides students with facilities and resources for
exploring system vulnerabilities. It is expected that any exploits attempted will be carefully designed
with a specific purpose in mind. Exploit designs will be documented and delivered to the instructor before
implementation occurs. They will involve neither physical access to machines nor vandalism
(including destruction of software or hardware infrastructure). Exploits will most often involve
violating system confidentiality, consistency, and/or non-repudiation attributes. Attack implementation
and testing will be performed solely within the laboratory on the machines provided for that
purpose. These machines will remain on an isolated network during this process. If non-
laboratory machines are used, the student will receive no credit for the assignment.
Attacks on operational networks potentially violate existing laws with severe consequences.
Illegal activity is not condoned and will be dealt with severely. Red team analysis of systems should
be performed with the informed consent of the owners of the system being analyzed and not in
connection with this course. Resources: This course is project oriented. Students are expected to independently find the resources
needed to fulfill their assignments. They will also write a number of reports and present their results.
Most lectures will be run as a seminar with the instructor questioning the students. The instructor is
available to the students for discussion of design alternatives and as an information resource.
Introduction to Computer and Network Security
Navigating Shades of Gray is the required text.
A number of security-related URL’s, videos and other information will be provided. Use of open
source tools for system implementation is strongly encouraged. Books worth referring to: (The first 4
are on reserve)
- S. Young and Dave Aitel, The Hacker’s
- Bob Toxen, Real World Linux Security:
- Kolesnikov and Hatch, Building Linux VPN’s
- John Chirillo, Hack Attacks Revealed (lots of information, well-organized, poorly written)
- Building Secure Software, Addison-Wesley.
Assignments: Demonstrations and presentations will be done in the lab at times arranged with the
instructor. They are a form of oral examination and should be treated accordingly. They will include
either individuals or work groups and the instructor. Written assignments must be turned in before the
start of class on the day they are due. No credit is given for late assignments.
For assignments with presentations, students are given 10 minutes to present their work and
convince the instructor that they fulfilled the assignment. Students will be given credit for the
intersection of the information in the written report and their demonstration. No credit will be given for
functionality presented to the instructor that is not in the written report, nor will credit be given for
written functionality that does not work during the demonstration.
The ECE6490 section is the same as ECE4490, except that the graduate students do an independent
research project. The project topic is due on October 9. The project will be graded as if it were a
conference paper. The last 2 class meetings are an in class seminar on these projects. The papers are due
by Nov. 27. If students need guidance, they need to initiate contact with the instructor.
Grading: (Percentages. For undergraduates, points
and percentages are identical. For graduate students, they are quite different.)
A – 90 or above
B – 80 to 89
C – 70 to 79
D – 60 to 69
F – Below 60
Deadlines are fixed. No extensions will be given. No late assignments will be accepted. This means that
assignments are due at the start of class. No credit
will be given for a late assignment. Printers printing slowly are not an adequate excuse for a late assignment. Presentations are interactive. Students must be prepared to answer questions from the instructor and other students. Documents must be professionally prepared. Sloppy and poorly written documents will be graded harshly. Students may be asked to re-write the document to make it fulfill professional standards. The documentation is due at the start of class on the due date. Presentations will be given during the week. A sign up sheet will be circulated in class.

**Schedule:** (Subject to change)

<table>
<thead>
<tr>
<th>Date</th>
<th>Due</th>
<th>Reading assignments</th>
<th>Lecture topic</th>
<th>On Travel</th>
</tr>
</thead>
<tbody>
<tr>
<td>10/8/2018</td>
<td>Game console security</td>
<td></td>
<td></td>
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<tr>
<td>10/16/2018</td>
<td>War Game in Class. External materials provided.</td>
<td>How to survive under an authoritarian government</td>
<td></td>
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<tr>
<td>10/30/2018</td>
<td>Virus assignment due</td>
<td>Wireless security / Ethical Hacker Presentation</td>
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<tr>
<td>11/6/2018</td>
<td>Fall break</td>
<td></td>
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<tr>
<td>11/20/2018</td>
<td>Graduate research</td>
<td>Graduate student research presentations</td>
<td>Thanksgiving</td>
<td></td>
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<tr>
<td>11/27/2018</td>
<td>Graduate research</td>
<td>Graduate student research presentations</td>
<td>EEE Blockchain for Ag. Hawaii</td>
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<tr>
<td>12/4/2018</td>
<td>Wireless assignment due</td>
<td>Class has presentations of wireless assignment. Review during the week</td>
<td></td>
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<tr>
<td>12/15/2018</td>
<td>Final at 7:00 PM</td>
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<table>
<thead>
<tr>
<th>Assignment</th>
<th>Group or Individual</th>
<th>Deliverable</th>
<th>2-Oct</th>
<th>Points</th>
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<tbody>
<tr>
<td>VPN and sniffer installation, use, and analysis</td>
<td>Individual (pair)</td>
<td>Document and presentation</td>
<td>09/11/18</td>
<td>15</td>
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<tr>
<td>Graduate research topic</td>
<td>Individual (6490 only)</td>
<td>1 page abstract</td>
<td>09/11/18</td>
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<tr>
<td>War game</td>
<td>Groups (dynamic)</td>
<td>In class competition</td>
<td>10/16/18</td>
<td>10 Extra points for winners</td>
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<tr>
<td>Buffer overflow implementation</td>
<td>Individual</td>
<td>Report and demonstration</td>
<td>10/02/18</td>
<td>25</td>
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<tr>
<td>Polymorphic virus implementation</td>
<td>Individual</td>
<td>Report and demonstration</td>
<td>10/30/18</td>
<td>25</td>
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<tr>
<td>Wireless Security</td>
<td>Group</td>
<td>Report and Demonstration</td>
<td>12/04/18</td>
<td>15</td>
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<tr>
<td>Graduate research project (6490 only)</td>
<td>Individual</td>
<td>Report and in-class presentation</td>
<td>11/20/18</td>
<td>45</td>
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<td>Class participation</td>
<td>Individual</td>
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<tr>
<td>Final exam</td>
<td>Individual</td>
<td>Examination</td>
<td>12/13/2018</td>
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<td>Total Undergrad</td>
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<tr>
<td>Total Grad</td>
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